SECAM discriminator IC

BA7007

The BA7007 is a SECAM discriminator suitable for use in video cassette recorders. The BA7007 includes a pre-limiter circuit, detector, slicer-tuning amplifier and comparator. By adding a ceramic filter, and LC circuit for the $f_H/2$ oscillation frequency, and a few resistors and capacitors it is possible to construct an extremely sensitive SECAM discriminator using a simple circuit with low space requirements that will lead to lower costs, and better performance and reliability.

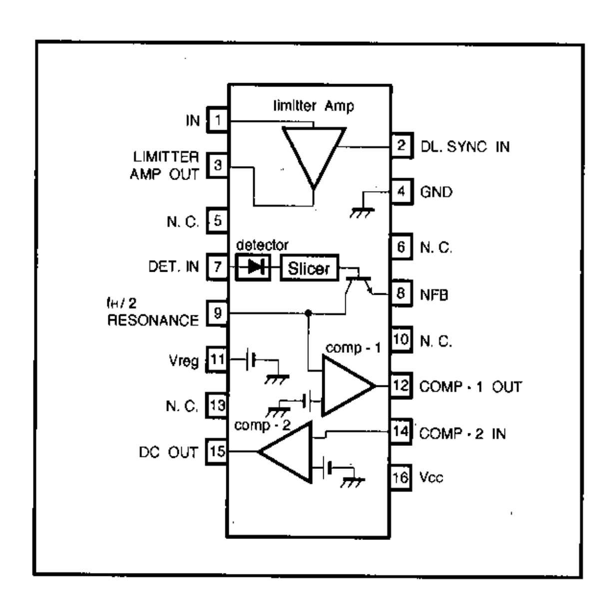
●Applications

SECAM discriminator for VCRs.

●Features

1)Extremely stable SECAM discrimination even with power supply and burst-signal input level fluctuations.
2)Digital conversion-type integration is used to ensure a large noise margin, and give high sensitivity.
3)Low variation in discriminator sensitivity means that adjustment is not necessary.
4)Few external components required.
5)Large current output capacity.

●Block diagram



●Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{CC}	15	V
Power dissipation	Pd	400 *	mW
Operating temperature	Topr	−25~75	℃
Storage temperature	Tstg	−55~125	℃

* Reduced by 4mW for each increase in Ta of 1°C over 25°C.

●Electrical characteristics (Unless otherwise specified Ta=25℃ and Vcc=9V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement Circuit
Quiescent current	I_Q	—	10	15	mA	Limiter amplifier off, no output	Fig.1
Limiter amplifier gain	G_{V1-4}	11	15	19	dB	V_{IN}=0.1V_{P-P} ; f=10kHz, R_L=100kΩ	Fig.1
Limiter amplifier maximum gain	V_{O4}	0.9	1.25	1.6	V_{P-P}	V_{IN}=0.1V_{P-P} ; f=10kHz, R_L=100kΩ	Fig.1
Extracted pulse threshold	V_{TH}	—	0.6	—	V	Pin 2 voltage	Fig.1
Tuning amplifier output voltage	V_{O10}	0.2	1.35	2.5	V_{P-P}	V=0.2V_{P-P} ; f=10kHz	Fig.1
Tuning amplifier supply voltage	V_{10}	—	4.3	—	V	R_L=10kΩ	Fig.1
DC output voltage	V_{15ON}	6.5	8.2	—	V	R_L=510Ω	Fig.1
DC output leakage voltage	V_{15OFF}	—	0.0	0.5	V	R_L=100kΩ	Fig.1

●Measurement circuit

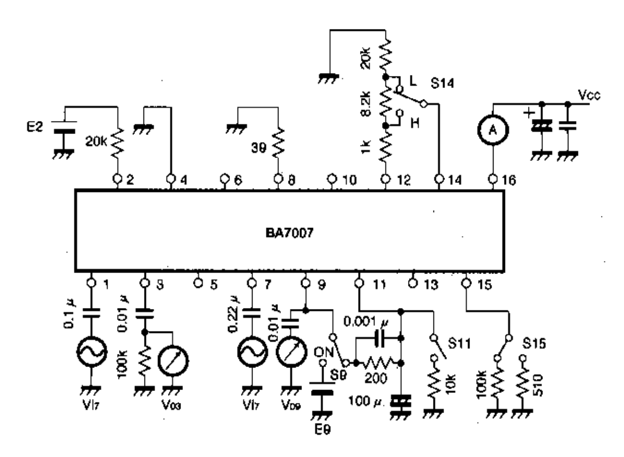


Fig.1

	E2	E9	S9	S11	S14	S15
I_{CC}	0	0	OFF	OPEN	L	100k
G_{V2-3}, V_{O3}	2.5V	0	OFF	OPEN	L	100k
V_{O9}	0	0	OFF	OPEN	L	100k
V_{11}	0	0	OFF	CLOSE	L	100k
V_{15ON}	0	6.5V	ON	OPEN	H	510
V_{15OFF}	0	6.5V	ON	OPEN	L	100k

●Application example

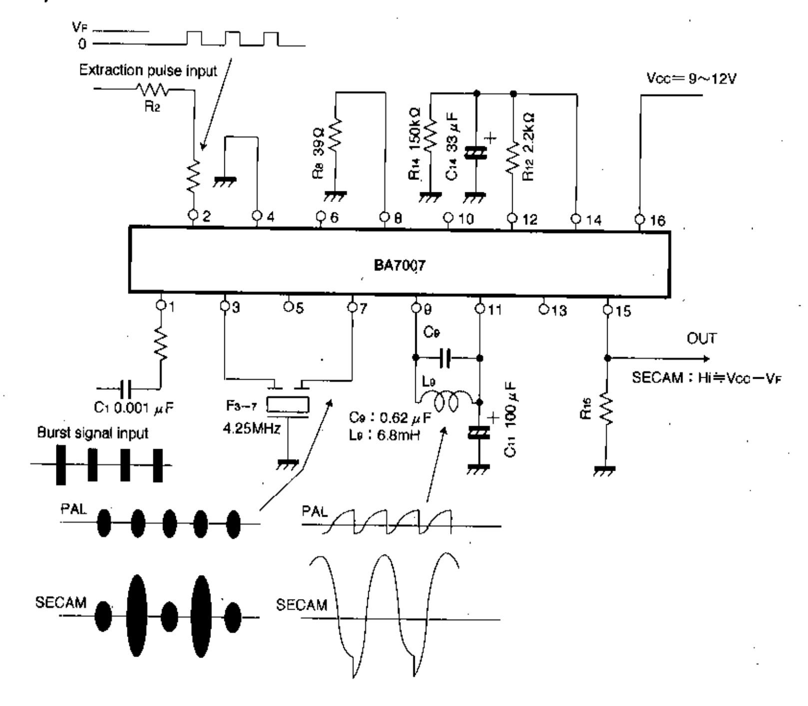
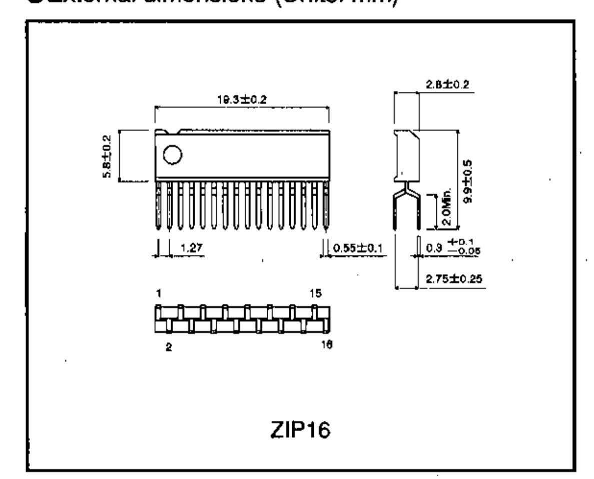


Fig.2

C_1	Limiting amplifier input coupling capacitor
R_2	Extraction pulse current limiting resistor
$F_{3\text{-}7}$	4.25MHz band-pass filter (impedance: 1kΩ) (It is also possible to use a 4.4MHz filter, but there will be a slight drop in discrimination sensitivity). Input/output impedance: 1kΩ
R_8	Resistor for adjusting the tuning amplifier output level
C_9 L_9	For $f_{H/2}$ resonator circuit
C_{11}	Ripple filter (for LC resonator circuit)
C_{12} C_{14} R_{14}	Components that determine the discrimination time (charge/discharge time constant) Charging time constant = R_{12} and C_{14} Discharge time constant = R_{14} and C_{14}
R_{15}	Resistor for absorption of output leakage

●External dimensions (Units: mm)



ZIP16